

WHAT IS CLAIMED IS:

1. A satellite communication system, comprising:
at least one gateway station;
at least one satellite having a polar orbit, said at least one satellite adapted to provide single hop transpolar communication between two gateways separated by as much as 180° in longitude; and
at least one antenna connected to said at least one gateway station for tracking said at least one satellite.
2. The system of claim 1, wherein said polar orbit includes an active portion, said portion defined by 78° latitude.
3. The system of claim 1, wherein said polar orbit comprises an elliptical orbit.
4. The system of claim 1, wherein said polar orbit comprises a circular orbit.
5. The system of claim 3, wherein said communication system comprises four satellites.
6. The system of claim 1, wherein an apogee for said system is about forty thousand kilometers.
7. The system of claim 1, wherein said two gateways are located within a latitude of about 25° to 30° north.

8. The system of claim 1, wherein said at least one antennae has a minimum angle of elevation of at least 5°.
9. The system of claim 1, wherein a propagation delay between two gateway stations for said system ranges from about 250 to 300 ms.
10. The system of claim 1, wherein said at least one antennae points toward a pole of the earth.
11. The system of claim 10, wherein said pole comprises at least one of:
 - a south pole; and
 - a north pole.
12. The system of claim 1, wherein a frequency of said at least one antennae comprises at least one of
 - a C band frequency;
 - a Ku band frequency; and
 - a Ka band frequency.
13. The system of claim 1, wherein said satellite comprises a transpolar satellite.
14. The system of claim 1, wherein said satellite system comprises three satellites.
15. The system of claim 13, wherein said satellite system comprises a pair of antennas connected to said gateway for tracking said satellites.

16. The system of claim 4, wherein said satellite system comprises at least six satellites.

17. A method of providing trans-polar satellite communications coverage for the earth, comprising:

providing at least one gateway station;

providing at least one satellite having a polar orbit, said at least one satellite adapted to provide single hop transpolar communication between two gateways separated by as much as 180° in longitude; and

providing at least one antenna connected to said at least one gateway station for tracking said at least one satellite.

18. The method of claim 17, wherein said polar orbit includes an active portion, said portion defined by 78° latitude.

19. The method of claim 17, wherein said polar orbit comprises an elliptical orbit.

20. The method of claim 17, wherein said polar orbit comprises a circular orbit.

21. The method of claim 19, wherein said communication system comprises four satellites.

22. The method of claim 17, wherein an apogee for said system is about forty thousand kilometers.

23. The method of claim 17, wherein said two gateways are located within a latitude of about 25° to 30° north.

24. The method of claim 17, wherein said at least one antennae has a minimum angle of elevation of at least 5°.

25. The method of claim 17, wherein a propagation delay between the two gateway stations for said system ranges from about 250 to 300 ms.

26. The method of claim 17, wherein said at least one antennae points toward a pole of the earth.

27. The method of claim 17, wherein said pole comprises at least one of:

- a south pole; and
- a north pole.

28. The method of claim 17, wherein a frequency of said at least one antennae comprises at least one of

- a C band frequency;
- a Ku band frequency; and
- a Ka band frequency.